

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 011 419 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
02.05.2002 Bulletin 2002/18

(51) Int Cl.7: **G06F 19/00, A61B 5/00**

(86) International application number:
PCT/US97/02789

(21) Application number: 97924493.6

(87) International publication number:
WO 97/31567 (04.09.1997 Gazette 1997/38)

(22) Date of filing: 25.02.1997

(54) **Method and apparatus to assist a user in creating a medical protocol**

Verfahren und Vorrichtung zur Unterstützung eines Benutzers zum Erzeugen eines medizinischen Protokolls

Méthode et dispositif pour assister un utilisateur à créer un protocole médical

(84) Designated Contracting States:
AT BE CH DE DK FI FR GB IT LI NL SE

(30) Priority: 01.03.1996 US 609689

(43) Date of publication of application:
28.06.2000 Bulletin 2000/26

(73) Proprietor: **Medicomp Systems, Inc.**
Chantilly, VA 22021 (US)

(72) Inventor: **GOLTRA, Peter, S.**
Middleburg, VA 20117 (US)

(74) Representative: **Grünecker, Kinkeldey,
Stockmaier & Schwanhäusser Anwaltssozietät
Maximilianstrasse 58
80538 München (DE)**

(56) References cited:
EP-A- 0 531 889 WO-A-94/00817
WO-A-95/24010 US-A- 4 839 822
US-A- 5 089 978 US-A- 5 265 010
US-A- 5 387 164 US-A- 5 463 548

- **MASAHIKO OKADA ET AL: "KNOWLEDGE REPRESENTATION AND COMPILATION FOR SYMPTOM-DISEASE-TEST RELATIONSHIPS" IEEE TRANSACTIONS ON BIOMEDICAL ENGINEERING, vol. 36, no. 5, 1 May 1989 (1989-05-01), pages 547-551, XP000186098 ISSN: 0018-9294**

- **TANDY HERREN L ET AL: "THE ROLE OF INTELLIGENT PLANNING AND SCHEDULING IN THE DIAGNOSTIC PROCESS" MEDICAL INFORMATICS, ETHICS, CARDIOLOGY, INSTRUMENTATION, SAN DIEGO, OCT. 28 - 31, 1993, vol. 2, no. CONF. 15, 28 October 1993 (1993-10-28), page 640/641 XP000436875 SZETO A;RANGARAJ M RANGAYAN**
- **TIMPKA T: "A HYPERTEXT KNOWLEDGE BASE FOR PRIMARY CARE - LIMEDS IN LINCKS" PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON RESEARCH AND DEVELOPMENT IN INFORMATION RETRIEVAL. (SIGIR), CAMBRIDGE, MA., JUNE 25 - 28, 1989, no. CONF. 12, 25 June 1989 (1989-06-25), pages 221-228, XP000239151 BELKIN N J;VAN RIJSBERGEN C J**
- **BASSOE C -F: "AUTOMATED DIAGNOSES FROM CLINICAL NARRATIVES: A MEDICAL SYSTEM BASED ON COMPUTERIZED MEDICAL RECORDS, NATURAL LANGUAGE PROCESSING, AND NEURAL NETWORK TECHNOLOGY" NEURAL NETWORKS, vol. 8, no. 2, 1 January 1995 (1995-01-01), pages 313-319, XP000497809 ISSN: 0893-6080**

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 1 011 419 B1

Description**FIELD OF THE INVENTION**

[0001] The present invention relates to methods and apparatus for prompting a list of medical findings into a medical chart and more particularly to an electronic medical system which helps healthcare professionals create medical protocols or assist with direct entry by prompting the healthcare professional with a list of additional medical findings associated with the medical findings already entered into the protocol.

BACKGROUND OF THE INVENTION

[0002] While many aspects of the operation and administration at hospitals and other healthcare facilities have been computerized over the past years, one of the most important aspects, the generation of patient charts, the updating of these charts, the review of the chart, and the generation of care plans by healthcare professionals such as doctors, nurses, therapists, and the like, is still performed largely by hand. As a result, while a patient chart of some type is normally generated shortly after a patient is admitted to the healthcare facility for a particular service, for example, an intensive care unit, cardiac surgery unit, or the like, the chart may not always be updated to reflect actual progress by the patient.

[0003] When a patient comes into a health care facility, the patient may have numerous related or unrelated problems that the healthcare provider will have to sort through when determining what is wrong with the patient and what treatments should be prescribed for the patient. The diagnostic step in the treatment of the patient can thus be a very difficult process and arguably the most important step in treating a patient. Today, most healthcare professionals must rely on their memory and experience as well as written materials when making a diagnosis. Unfortunately, all of the needed materials may not be available during the examination of the patient and thus important questions may not be asked or tests performed which could help the healthcare professional in determining the correct diagnosis for the problems being experienced by the patient. Thus, it would be advantageous to allow healthcare professionals to create medical protocols which prompt the healthcare professional with lists of questions that should be asked, symptoms to look for, and tests that should be run, during the examination process.

[0004] Even after a diagnosis has been made and a care plan has been devised, the patient chart may not be referred to when the healthcare professional is preparing progress notes on the patient. Thus, there is no check to assure that the original treatments have in fact been followed, or that proposed resolution dates in the chart have been met or updated. When changes in the chart are made as a result of changes in the status of a

patient, such changes are frequently not entered in the original chart. Thus, good archival records are not generally maintained for changes in treatment. The professional notes for a particular patient frequently do not include an updated version of the patient's chart. Further, even though a form may be available for progress notes, the form does not take into account the unique problems of the individual patient, and does not give the healthcare professional a checklist of items to be investigated for such problems or suggested interventions or resolution dates for the particular patient problem. When changes are made or expected outcomes are not achieved, the reasons for such occurrences are seldom provided, making any further review far more difficult. Again, a good archival record of what has been done for the particular patient is not readily available. Because of the absence of good archival records, and the absence of reasons for changes or deviations, tracking a problem for quality control, legal or other reasons is difficult, and it is difficult to research the relative effectiveness of various interventions or to perform other research from the records.

[0005] The lack of a complete archival record can also cause significant problems for healthcare professionals who must adequately document the examination and treatment of patients whose medical bills are being paid by insurance companies. If the healthcare professional does not provide proper documentation, the insurance companies will not pay the bills. Furthermore, healthcare professionals have less time to spend with each patient these days. As a result, the healthcare professional does not have time to figure out from the original chart and the added progress notes, if they are available, the previous problems of the patient and what treatments were prescribed. Thus, the healthcare professional needs to have an easy way to review charts for each patient.

[0006] Even with computer based patient chart and/or progress note systems, many of the problems indicated above still exist. Such systems also in many instances lack flexibility so as to be configurable by the healthcare professional so as to provide specific help in determining diagnoses and for prompting the healthcare professional with lists of symptoms, questions which should be asked and tests that should be performed in certain circumstances. In addition, they frequently do not give the healthcare professional the ability to add special instructions or to add items as required. Further, it is generally not possible to obtain either an updated chart or historical chart upon request. Thus, there is a need for a computer based medical system which enhances the diagnostic capabilities of a healthcare provider, provides initial patient charts as well as updated or historical care plans.

SUMMARY OF THE INVENTION

[0007] It is an object of the present invention to over-

come the problems cited above by providing a method and apparatus for helping healthcare professionals create clinical protocols or assist in direct entry of medical findings into a chart by prompting a healthcare professional with medical findings associated with at least one medical finding which has already been entered in the protocol. First of all, at least one medical finding for a patient is inputted into the system wherein each finding is assigned a point value for each diagnosis within a knowledge base. A total number of points for each diagnosis is then totalled for all of the findings which have been entered into the system. The possible diagnoses are then ranked in descending point total and a predetermined plurality of the highest ranked diagnoses are selected. Once the highest ranked diagnoses have been selected, the healthcare professional is prompted with additional findings associated with the selected diagnoses which have not yet been inputted into the clinical protocol.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] These and other features and advantages of the present invention will be readily apparent to one of ordinary skill in the art from the following written description, used in conjunction with the drawings, in which:

Figure 1 illustrates a block diagram of a computer based medical system according to one embodiment of the present invention; and

Figure 2 illustrates a flow chart describing the operation of one embodiment of the present invention.

DETAILED DESCRIPTION

[0009] The present invention uses a computer based medical system to prompt a healthcare professional with lists of medical findings the healthcare professional can use when creating a clinical protocol. A block diagram of the computer based medical system suitable for use in practicing the teachings of the present invention is illustrated in Figure 1. The medical system 10 contains a processor 16 with one or more input devices such as a keyboard 18. The processor 16 also has a database file or memory 20 and a knowledge base file or memory 22. The processor 16 operates a standard display controller 14 which in turn, controls a display device 12 at the work station. The display device 12 can be any standard type of display monitor, attached or wireless. Furthermore, the apparatus 10 can be networked to other such medical systems not illustrated which can be placed around a hospital or healthcare facility. This allows multiple people to use the medical system for the same or for multiple patients.

[0010] The present invention is based upon medical findings. Medical findings are defined as symptoms, personal and family history, physical findings, diagnoses, tests, and therapy which may be present for a

particular patient. The database file 20 contains over 50,000 such medical findings and are divided into categories such as symptoms, personal and family history, physical findings, diagnoses, tests, and therapy. Furthermore, the descriptions of the medical findings stored in the database file 20 are hierarchical and can have up to eight levels of description. The first level gives the simplest explanation of a medical finding, for example, a cough. The explanations become more detailed the lower the level. As noted above, a first level finding may be a cough, while a second level finding may be a brassy cough. Another feature of the database file 20 is that all of the medical findings are coded so as to be distinct from each other. For example, each medical finding can be assigned an internal number which uniquely identifies that particular medical finding. In addition, each medical finding also contains a code which indicates which category within the database file 20 the medical finding is associated with. For example, a medical finding may contain the code SYM to indicate that the medical finding is associated with the symptoms section; HIS to indicate that the medical finding is associated with the history section; PHY to indicate that the medical finding is associated with the physical section; DIS to indicate that the medical finding is associated with the diagnoses section; TST to indicate that the medical finding is associated with the test section; and RX to indicate that the medical finding is associated with the therapy section.

[0011] As noted above, the medical system 10 also contains a knowledge base file 22. The knowledge base file 22 contains a detailed description of over 2,000 diagnoses. The detailed description of the diagnoses uses the medical finding terms which are stored in the database file 20. For each diagnosis, each medical finding associated with the diagnosis is assigned a numerical value depending on how important such a medical finding may be to the diagnosis. For example, in the detailed description of the diagnosis for coronary artery stenosis, medical findings such as chest pain or discomfort and dyspnea (shortness of breath), which are strong showings of coronary artery stenosis, will be given high values while a lack of an appetite may not be described in the diagnoses at all or given a very low value. In one embodiment of the present invention, medical findings are assigned values between 1 and 20 wherein the value 20 is the highest value that can be given to an important medical finding, however the invention is not limited thereto. Thus, the values assigned to each medical finding within the detailed description is proportional to how important such a medical finding is to the diagnosis. Furthermore, the values can vary for a given medical finding depending on a plurality of factors such as age of the patient and timeframe. i.e., when a symptom occurred in relation to other symptoms. For example, a white blood cell count of 18,000 may be given a high value if the patient is an adult while the same medical finding is not given a value at all if the patient is a new-born child

because this is normal for a new-born child.

[0012] Here again, the medical findings used in the detailed descriptions of the diagnoses are all coded, with their respective internal numbers. In addition, over 400,000 links are provided between the database file 20 and the knowledge base file 22. In other words, the findings in the database file 20 occur over 400,000 times in the knowledge base memory 22.

[0013] The detailed description of the diagnoses stored in the knowledge base file 22 contains lists of symptoms as well as personal and family history and physical findings which a patient should or may have experienced. In addition, the detailed diagnoses contain lists of tests, possible therapies, and medications which should be prescribed for the patient if the healthcare professional decides that the patient is experiencing a particular illness or problem.

[0014] According to one embodiment of the present invention, it is possible for a healthcare professional to use the present invention when creating clinical protocols which can be used as a guideline for examining and treating a patient. The present invention will now be described in more detail with reference to the flow chart illustrated in Figure 2 which describes the operation of this embodiment of the present invention. First of all, the healthcare professional may enter one or more medical findings into the computerized medical system into a clinical protocol. Clinical protocols are a structured combination of coded medical phases selected from a structured medical database of coded phases and is presented in the order of appearance desired by the healthcare professional. The healthcare professional selects at least one medical finding to start creating the clinical protocol.

[0015] Since the medical findings are coded, upon selection of the medical findings for the clinical protocol, the entered information is automatically structured in the protocol in the same format as the medical database used to build the protocols, i.e., divided into specific sections. That is, symptoms automatically go into the symptoms section, physical findings go into the physical examination section, diagnosis goes into the assessment section, etc. The creation of protocols is described in U. S. 579420, entitled "Creating and Using Protocols to Create a Patient Chart" which is being filed concurrently herewith and is expressly incorporated herein by reference. The healthcare professional then selects the prompting feature of the present invention by clicking on the corresponding feature which is displayed on the display screen.

[0016] When the prompting feature is selected, the computerized medical system takes each medical finding entered into the protocol and builds an internal list of possible diagnoses. The list of possible diagnoses is formed by using the point values assigned to each medical finding for each diagnosis stored in the knowledge base file 22. When all of the medical findings have been added together for each diagnosis, the diagnoses are

ranked in descending point total. The computerized medical system then selects a predetermined number of diagnoses. For example, the computerized medical system could select the top five diagnoses. It will be understood that while the computerized medical system may be set to a default value, it may be possible for a healthcare professional to change the system so as to only use, for example, the top two diagnoses or the top 10 diagnoses, depending on the desires of the healthcare professional.

[0017] Once the top diagnoses have been selected, the computerized medical system will prompt the healthcare professional with other medical findings which have not been entered into the protocol but which may occur or are associated with, the top diagnoses. Thus, with a list of medical findings displayed for the healthcare professional, the healthcare professional can add new medical findings to the protocol which will remind the healthcare professional to ask the patient whether the patient is experiencing other specific symptoms, has a certain family history, or the doctor can check for certain medical or physical findings.

[0018] Since the prompted list of medical findings may be quite large if there are numerous highly descriptive diagnoses which are selected during the intelligent prompting feature, the present invention can rank all of the findings which have not yet been entered into the protocol by the maximum range of points in each diagnosis. Then, all the findings with less than a specific number of points can be eliminated from the prompted list, thereby not encumbering the healthcare professional with a cumbersome list of possible medical findings. However, according to one embodiment of the present invention, all medical findings which are in the top two hierarchical levels in the finding database are presented with the prompted list regardless of whether their specified point totals are less than the predetermined number. Furthermore, the prompted list of medical findings may be displayed in descending point value.

[0019] For example, a healthcare professional may want to create a protocol for patients experiencing chest pains. The healthcare professional may then enter the medical findings of chest pain or discomfort and dyspnea into the computerized medical system and select the prompting feature. The medical system will add up all of the point totals for the chest pain or discomfort finding and the dyspnea finding and generate an internal list of diagnoses. In this example, the medical system will generate an internal list containing the following diagnoses: (1) coronary artery stenosis, (2) angina pectoris, (3) chronic reflux esophagitis, (4) acute myocardial infarction, and (5) pulmonary embolism. The system then generates a list of all of the medical findings associated with the diagnoses in the internal list that have not yet been entered into the protocol. The medical system will then prompt the healthcare professional with a list of additional medical findings from which the healthcare professional may select and add to the clinical protocol be-

ing created. As explained above, the list of additional medical findings can be limited so as not to encumber the healthcare professional with a cumbersome list of possible medical findings. The healthcare professional, after adding several more medical findings, may again select the prompting feature to generate a new list of diagnoses and another prompted list of medical findings.

[0020] As noted above, the medical findings are divided into six subjects or sections (symptoms, history, physical findings, diagnosis, tests, and therapy). Thus, the healthcare professional may select from which section of medical findings the healthcare professional wants to be prompted from when using the prompting feature. For example, the healthcare professional may select the section of symptoms when building the clinical protocol. Thus, the medical system will provide a list of other symptoms from the top selected diagnoses generated by the prompting feature.

[0021] According to another embodiment of the present invention, the prompting feature can also be used when creating a patient chart. For example, after the healthcare professional has entered several medical findings into a patient chart, the healthcare professional can select the prompting feature. The medical system will then generate a list of most likely diagnoses based upon the point values assigned to the entered medical findings. A list of additional medical findings will then be displayed on the display screen.

[0022] It will be appreciated by those of ordinary skill in the art that the present invention can be embodied in other specific forms without departing from the invention as defined by the appended claims.

Claims

1. A method for assisting a user in creating a medical protocol by prompting said user with a list of medical findings, comprising the steps of:

storing a list of predetermined medical findings;
 storing a list of predetermined diagnoses where each of said predetermined medical diagnoses is described by at least one associated medical finding with an assigned numerical value for said diagnosis that depends on how important the at least one associated medical finding is to said diagnosis;
 selecting at least one medical finding from said list of predetermined medical findings and inputting said at least one medical finding into said medical protocol;
 calculating for each diagnosis in the list of predetermined diagnoses a total numerical value by adding said numerical values assigned to the selected medical findings associated with the diagnosis after having inputted said medical

findings;

selecting at least one diagnosis from those having highest total numerical values; and
 prompting a user with additional medical findings associated with said selected diagnoses which have not yet been inputted into said medical protocol so that said user can select some of said additional medical findings for including them in said medical protocol.

2. A method according to claim 1, wherein the user is prompted with only medical findings that each have a numerical value above a predetermined value.

3. A method according to claim 1, further comprising the steps of:

ranking the possible diagnoses in descending order according to said total numerical value; and
 selecting a predetermined plurality of the highest ranked diagnoses.

4. A method according to claim 3, wherein the user is prompted with only medical findings that each have a numerical value above a predetermined value.

5. A method according to claim 3, wherein the five highest ranked diagnoses are selected.

6. A device for assisting a user in creating a medical protocol by prompting said user with a list of medical findings, comprising:

storage means adapted to store a list of predetermined medical findings;

storage means adapted to store a list of predetermined medical diagnoses wherein each of said predetermined medical diagnoses is described by at least one associated medical finding with an assigned numerical value for said diagnosis that depends on how important the at least one associated medical finding is to said diagnosis;

means adapted to select at least one medical finding from said list of predetermined medical findings;

means adapted to enter said selected at least one medical finding for a patient into said device;

means adapted to calculate for each diagnosis in the list of predetermined diagnoses a total numerical value by adding said numerical values assigned to the selected medical findings associated with the diagnosis;

means adapted to select at least one diagnosis from those having highest total numerical values; and

means adapted to prompt said user with additional medical findings associated with said selected diagnosis which have not yet been entered;

means adapted to select some of said additional medical findings for including them in said medical protocol based on responses from the user. 5

7. A device according to claim 6, further comprising means adapted to prompt said user with only medical findings with total numerical values above a predetermined value. 10

8. A device according to claim 6, further comprising: 15
- means adapted to rank said selected diagnoses in descending order according to said total numerical value; and
- means adapted to select a predetermined plurality of said highest ranked diagnoses. 20

9. A device according to Claim 8, further comprising means adapted to prompt said user with only medical findings with total numerical values above a predetermined value. 25

10. A device according to claim 8, wherein the five highest ranked diagnoses are selected. 30

Patentansprüche

1. Verfahren, mit dem ein Benutzer beim Erzeugen eines medizinischen Protokolls unterstützt wird, indem dem Benutzer eine Liste medizinischer Befunde vorgelegt wird, das die folgenden Schritte umfasst: 35

Speichern einer Liste vorgegebener medizinischer Befunde; 40

Speichern einer Liste vorgegebener Diagnosen, wobei jede der vorgegebenen medizinischen Diagnosen durch wenigstens einen damit verbundenen medizinischen Befund mit einem zugeordneten numerischen Wert für die Diagnose beschrieben wird, der davon abhängt, wie wichtig der wenigstens eine damit verbundene medizinische Befund für die Diagnose ist; 50

Auswählen wenigstens eines medizinischen Befundes aus der Liste vorgegebener medizinischer Befunde und Eingeben des wenigstens einen medizinischen Befundes in das medizinische Protokoll; 55

Berechnen eines numerischen Gesamtwertes für jede Diagnose in der Liste vorgegebener Diagnosen durch Addieren der numerischen Werte, die den ausgewählten medizinischen Befunden zugeordnet sind, die mit der Diagnose verbunden sind, nachdem die medizinischen Befunde eingegeben worden sind;

Auswählen wenigstens einer Diagnose aus denen mit den höchsten numerischen Gesamtwerten; und

Vorlegen zusätzlicher medizinischer Befunde, die mit den ausgewählten Diagnosen verbunden sind und noch nicht in das medizinische Protokoll eingegeben wurden, für den Benutzer, so dass der Benutzer einige der zusätzlichen medizinischen Befunde auswählen kann, um sie in das medizinische Protokoll zu integrieren.

2. Verfahren nach Anspruch 1, wobei dem Benutzer nur medizinische Befunde vorgelegt werden, die jeweils einen numerischen Wert über einem vorgegebenen Wert haben.

3. Verfahren nach Anspruch 1, das des Weiteren die folgenden Schritte umfasst:

Einstufen der möglichen Diagnosen in absteigender Rangfolge entsprechend dem numerischen Gesamtwert; und

Auswählen einer vorgegebenen Vielzahl der am höchsten eingestuften Diagnosen.

4. Verfahren nach Anspruch 3, wobei dem Benutzer nur medizinische Befunde vorgelegt werden, die jeweils einen numerischen Wert über einem vorgegebenen Wert haben.

5. Verfahren nach Anspruch 3, wobei die fünf am höchsten eingestuften Diagnosen ausgewählt werden.

6. Vorrichtung, mit der ein Benutzer beim Erzeugen eines medizinischen Protokolls unterstützt wird, indem dem Benutzer eine Liste medizinischer Befunde vorgelegt wird, die umfasst:

eine Speichereinrichtung, die eine Liste vorgegebener medizinischer Befunde speichert;

eine Speichereinrichtung, die eine Liste vorgegebener medizinischer Diagnosen speichert, wobei jede der vorgegebenen medizinischen Diagnosen durch wenigstens einen damit verbundenen medizinischen Befund mit einem zu-

- geordneten numerischen Wert für die Diagnose beschrieben wird, der davon abhängt, wie wichtig der wenigstens eine damit verbundene medizinische Befund für die Diagnose ist;
- eine Einrichtung, die wenigstens einen medizinischen Befund aus der Liste vorgegebener medizinischer Befunde auswählt;
- eine Einrichtung, mit der der wenigstens eine medizinische Befund für einen Patienten in die Vorrichtung eingegeben wird;
- eine Einrichtung, die für jede Diagnose in der Liste vorgegebener Diagnosen einen numerischen Gesamtwert errechnet, indem sie die numerischen Werte addiert, die den ausgewählten medizinischen Befunden zugeordnet sind, die mit der Diagnose verbunden sind;
- eine Einrichtung, die wenigstens eine Diagnose aus denen mit den höchsten numerischen Gesamtwerten auswählt; und
- eine Einrichtung, die dem Benutzer zusätzliche medizinische Befunde vorlegt, die mit den ausgewählten Diagnosen verbunden sind und noch nicht eingegeben wurden;
- eine Einrichtung, die einige der zusätzlichen medizinischen Befunde auswählt, um sie auf der Grundlage von Reaktionen des Benutzers in das medizinische Protokoll zu integrieren.
7. Vorrichtung nach Anspruch 6, die des Weiteren eine Einrichtung umfasst, die dem Benutzer nur medizinische Befunde mit einem numerischen Gesamtwert über einem vorgegebenen Wert vorlegt.
8. Vorrichtung nach Anspruch 6, der des Weiteren umfasst:
- eine Einrichtung, die die ausgewählten Diagnosen in absteigender Reihenfolge entsprechend dem numerischen Gesamtwert einstuft; und
- eine Einrichtung, die eine vorgegebene Vielzahl der am höchsten eingestufteten Diagnosen auswählt.
9. Vorrichtung nach Anspruch 8, die des Weiteren eine Einrichtung umfasst, die dem Benutzer nur medizinische Befunde mit numerischen Gesamtwerten über einem vorgegebenen Wert vorlegt.
10. Vorrichtung nach Anspruch 8, wobei die fünf am höchsten eingestufteten Diagnosen ausgewählt werden.

Revendications

- Procédé pour assister un utilisateur à créer un protocole médical en suggérant audit utilisateur une liste de résultats médicaux, comprenant les étapes, dans lesquelles :
 - on mémorise une liste de résultats médicaux prédéterminés ;
 - on mémorise une liste de diagnostics prédéterminés, où chacun desdits diagnostics médicaux prédéterminés est décrit par au moins un résultat médical associé, une valeur numérique allouée audit diagnostic dépendant de l'importance qu'a ledit au moins un résultat médical associé pour ledit diagnostic ;
 - on choisit au moins un résultat médical de ladite liste de résultats médicaux prédéterminés et l'on entre ledit au moins un résultat médical dans ledit protocole médical ;
 - on calcule, pour chaque diagnostic de la liste de diagnostics prédéterminés, une valeur numérique totale en additionnant lesdites valeurs numériques allouées aux résultats médicaux choisis associés au diagnostic après entrée desdits résultats médicaux ;
 - on choisit au moins un diagnostic parmi les valeurs numériques totales les plus élevées ; et
 - on suggère à un utilisateur des résultats médicaux supplémentaires associés auxdits diagnostics choisis qui n'ont pas encore été entrés dans ledit protocole médical, de sorte que ledit utilisateur peut choisir certains desdits résultats médicaux supplémentaires dans le but de les inclure dans ledit protocole médical.
- Procédé selon la revendication 1, dans lequel on ne suggère à un utilisateur que des résultats médicaux qui ont chacun une valeur numérique supérieure à une valeur prédéterminée.
- Procédé selon la revendication 1, comprenant les étapes, dans lesquelles :
 - on range les diagnostics possibles dans un ordre décroissant en fonction de ladite valeur numérique totale ; et
 - on choisit une pluralité prédéterminée des diagnostics rangés ayant les valeurs les plus élevées.
- Procédé selon la revendication 3, dans lequel on ne suggère à l'utilisateur que des résultats médicaux qui ont chacun une valeur numérique supérieure à une valeur prédéterminée.
- Procédé selon la revendication 3, dans lequel on choisit les cinq diagnostics rangés ayant les valeurs

les plus élevées.

6. Dispositif pour assister un utilisateur à créer un protocole médical en suggérant audit utilisateur une liste de résultats médicaux, comprenant :

5

des moyens de mémorisation aptes à mémoriser une liste de résultats médicaux prédéterminés ;

des moyens de mémorisation aptes à mémoriser une liste de diagnostics médicaux prédéterminés, dans lequel chacun desdits diagnostics médicaux prédéterminés est décrit par au moins un résultat médical associé, une valeur numérique allouée audit diagnostic dépendant de l'importance qu'a l'au moins un résultat médical associé pour le diagnostic ;

10

des moyens aptes à choisir au moins un résultat médical à partir de ladite liste de résultats médicaux prédéterminés ;

20

des moyens aptes à entrer l'au moins un résultat médical choisi pour un patient dans ledit dispositif ;

des moyens aptes à calculer, pour chaque diagnostic de la liste de diagnostics prédéterminés, une valeur numérique totale en additionnant lesdites valeurs numériques allouées aux résultats médicaux choisis associés au diagnostic ;

25

des moyens aptes à choisir au moins un diagnostic à partir de ceux ayant des valeurs numériques totales les plus élevées ; et

30

des moyens aptes à suggérer audit utilisateur des résultats médicaux supplémentaires associés audit diagnostic choisi qui n'ont pas encore été entrés ;

35

des moyens aptes à choisir certains desdits résultats médicaux supplémentaires dans le but de les inclure dans ledit protocole médical sur la base de réponses de l'utilisateur.

40

7. Dispositif selon la revendication 6, comprenant en outre des moyens aptes à ne suggérer audit utilisateur que des résultats médicaux ayant des valeurs numériques totales supérieures à une valeur prédéterminée.

45

8. Dispositif selon la revendication 6, comprenant en outre :

50

des moyens aptes à ranger lesdits diagnostics choisis dans un ordre décroissant en fonction de ladite valeur numérique totale ; et

des moyens aptes à choisir une pluralité prédéterminée desdits diagnostics rangés ayant les valeurs les plus hautes.

55

9. Dispositif selon la revendication 8, comprenant en

outre des moyens aptes à ne suggérer à l'utilisateur que des résultats médicaux ayant des valeurs numériques totales supérieures à une valeur prédéterminée.

10. Dispositif selon la revendication 8, dans lequel on choisit les cinq diagnostics rangés ayant les valeurs les plus hautes.

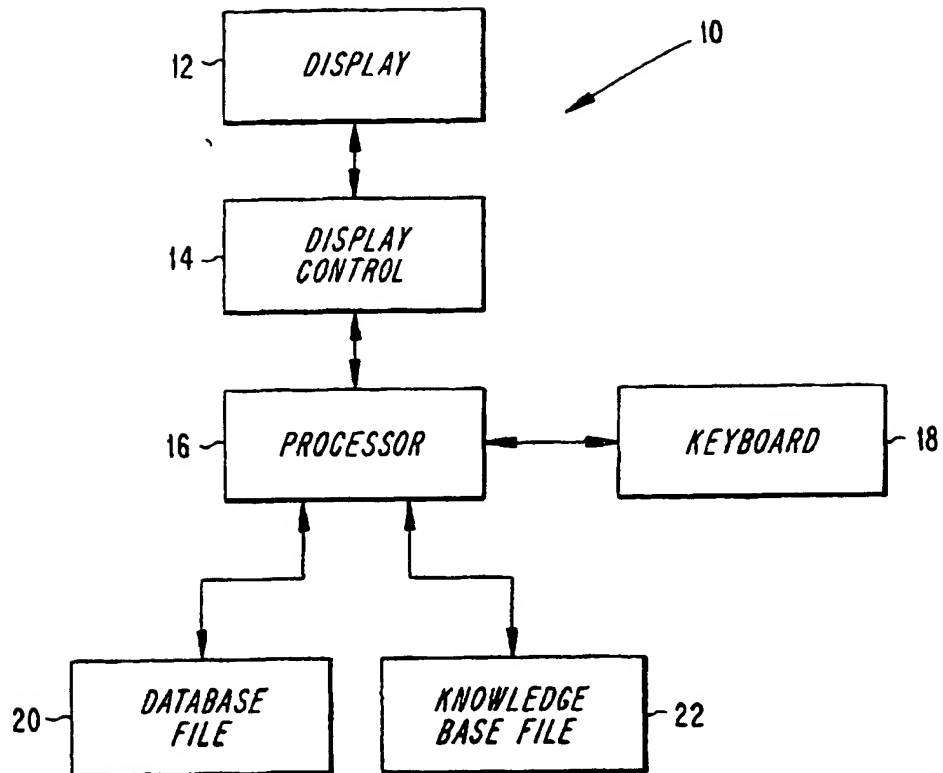


Fig. 1

Fig. 2

